



FW: Biomitigation review
 Julia Fonseca
 to:
 Carter Jessop
 08/03/2012 08:33 AM
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 From: Julia Fonseca <Julia.Fonseca@pima.gov>
 To: Carter Jessop/R9/USEPA/US@EPA,

3 Attachments



Rosemont Monitoring Comments_BFPa.pdf



RCC Mitigations from Forest Service_PimaCounty_Comments.docx

Hi, here is a courtesy copy of our comments on the July 26 biomitigation, reflecting yesterday's discussions as well as previous ones.

From: Julia Fonseca
Sent: Thursday, August 02, 2012 4:46 PM
To: 'Roth, Melinda D -FS'; Sebesta, Deborah K -FS
Cc: 'Jones, Larry -FS'; Brian Powell; Nicole Fyffe; Deseret Romero; Linda Mayro; Kerry Baldwin; Julia Fonseca
Subject: Biomitigation review

Dear Ms. Roth and Ms. Sebesta:

Thank you for engaging the cooperating agencies in a discussion of the potential for mitigation to offset some of the impacts that would be caused by the Forest's issuance of a permit for the Rosemont project. Pima County has participated in all of the meetings, and also reviewed various versions of the mitigation lists. We have found it helpful to our understanding of the project.

In this email attachment, staff provides comment on the preliminary biological mitigation document dated 26 July so that you may have our input for the next version. This document divides biological mitigation into three components:

- Group A: Mitigation required by U. S. Forest Service to offset impacts to Forest resources
- Group B: Other federally required mitigation
- Group C: Other desirable mitigation which is not required

As an overarching comment, cooperating agencies recommended that the Forest use a deliberative process that quantified or fully described the unmitigated impacts to resources, then examine the potential of mitigation to offset the losses in relation to "no net loss" (see attached pdf entitled Comments on Rosemont Monitoring Plan. This was drafted by Brian Powell on behalf of the group and incorporates reviews by Larry Jones and Angela Barclay). The mitigation dated 26 July should apply the process to Group A, in order to provide a strong basis for effective mitigation that would fully compensate the Forest for effects to surface resources.

In reviewing the document you have provided, we have concerns that the table overlooks whole

categories of required Group A impacts. We have embedded specific additional items and comments regarding these impacts into your proposal, reflecting our previous group discussions. A redline version as well as a pdf version of the 26 July document is provided for convenience of editing.

We see the need for mitigation and monitoring objectives throughout the document. While we inserted some in to the redline version, more work will be needed to develop objectives. Setting objectives is discussed further in the "Rosemont Monitoring Comments" pdf.

The Forest proposed the idea of a biological oversight committee (BOC). We see value in the idea of a BOC, independent of whether any funding is provided for Group B or C mitigation. We urge the Forest to establish a BOC consisting of interagency personnel independent of any decision by Rosemont to fund Group C activities.

The cooperating agencies also discussed the idea of Rosemont voluntarily funding biological mitigation through an endowment. Cooperators were instructed that such an endowment could not be required by the Forest for Group C mitigation activities. Furthermore, we understand that any voluntary mitigation would not be an obligation that would pass from Rosemont to successor companies. Thus, such an endowment might have very limited duration in the event of Rosemont's bankruptcy or sale. If this is incorrect, please let us and other cooperating agencies know at an upcoming meeting.

Regards,

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Comments on the Rosemont Monitoring Plan

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Recommended Elements of the Final Monitoring Plan

The following are elements of a monitoring plan that must be included (or expanded upon) for the Rosemont monitoring plan to have relevance and a chance for success.

1) Start with Clear Goals and Objectives. Goals are what we are trying to achieve and objectives are how we are going to achieve those goals. Goals can be broad, but objectives must be realistic, specific, and measureable. It of great concern that the DEIS monitoring plan mistakes objectives for goals, but even more importantly, there are no specific or measureable outcomes identified (Elzinga et. al. 2001). For example, in the Groundwater section, the stated objective (really a goal) is to “minimize impacts to groundwater resources.” This goal should be followed by objectives such as: 1) Monitoring XX well within each of 3 strata (strata based on distance from or geological setting in relation to the proposed mine) to detect a 1% annual change in groundwater resources (in each strata) with a Type I error rate of 10%. A methods section follows, but without these very clear objectives, we have no way to evaluate if the type of sampling, location, or number of samples is sufficient to actually observe a change that will be meaningful and that will be able to be acted on by managers. Therefore, we recommend that all objectives be articulated with sufficient detail for an analysis of the monitoring necessary to meet that level of detail. There are a number of good resources that can be used to estimate the level of sampling needed.

2) Be Smart and explicit about what to monitor. Assuming that the goal of the Rosemont monitoring program is to determine changes in abundance, distribution, condition, or other attributes of resources through time, one decision that has a powerful influence on program design—and on the ultimate effectiveness of the program—is the choice of which resource attributes or “parameters” should be measured from among the wide range of possibilities (National Research Council 2000). This decision will influence all aspects of the program, from design through implementation, and ultimately affect the likelihood that the program will successfully detect meaningful changes. Choosing from among the hundreds of potential monitoring parameters is difficult, and the basis for these choices is rarely well-justified (Noon 2003). Any entity that is developing a monitoring plan should clearly understand the importance of choosing the right parameter and be able to justify why one parameters was chosen over another. For example, there is considerable discussion about the use of *occupancy* versus *abundance*

in monitoring wildlife. The choice of which of these two parameters to monitor is neither trivial nor clear cut and will depend on the program goals, objectives, the species and population of interest, and so on. Our recommendation is that the final monitoring plan include a clear and cogent argument for why a particular parameter was chosen over another.

3) Being Able to Detect Change: Understanding variation and sampling timeframes.

Once a parameter is chosen, there is often an assumption that change will be detected, but often monitoring efforts fail to detect change because sampling designs and effort are insufficient (Legg and Nagy 2006, Field et. al. 2007). In particular, understanding the natural variation in parameters over space and time (daily, seasonal, annual, etc.) is fundamental to design of any sampling effort because these patterns drive decisions as to where and when to sample; in general, the more a parameter varies naturally in time and space, the more sampling effort that is required to obtain precise estimates of that parameter over time (Urquhart et. al. 1993, Urquhart et. al. 1998). For this reason, any discussion of what to monitor for the Rosemont project must include realistic and achievable sampling designs that take into account issues of variability. Further, the time scale of monitoring must be such that the program will be able to detect anticipated and significant results. For example, monitoring groundwater resources for the life of the mining operation will be insufficient to detect the anticipated impact of the mine on this key resource and therefore monitoring must continue beyond the life of the mine.

4) Sampling Design. Sampling is employed when it is not possible or prudent to survey all resources of interest due to financial or logistical limitations. The method of selecting where and how often to sample is referred to as *sampling design*; these choices ultimately determine the power and precision, spatial and temporal inference, and overall cost of a monitoring program (Thompson and Seber 1996, Lohr 1999, Morrison et. al. 2001, Thompson 2002). For the Rosemont project, we suggest that the sampling design must be clearly articulated, with particular emphasis on consideration of *probability-based sampling* (where sampling is drawn from a larger population of interest and each unit must have a known likelihood of being included in the sample) versus non-probability based (i.e., subjective) approaches that are often used in ecological monitoring (Olsen et. al. 1999). Regardless of the method used, clear justification is needed and this should be developed in consultation with a scientific advisory panel (more on this below).

5) Cost, Funding, and Timeframe. Monitoring can be very expensive and the amount of funding needed will be directly tied to what to monitor, the spatial extent of monitoring, the precision of estimates, and so forth. The monitoring plan must clearly articulate cost estimates and contingency plans for what to do if meeting the program objectives cost more money than was budgeted. To address these and other contingencies, the final monitoring plan must include details about an assured funding mechanism (ideally in the form of a bond or endowment) for the monitoring program. Finally, the time

frame of the monitoring plan is insufficient for almost all parameters that have been proposed. Specifically, the final monitoring plan activities should be commensurate with the time scale of impacts, particularly for those parameters that will not experience the greatest impacts until after the mine closes. Parameters related to water, wildlife, and plants will be impacted years beyond the mine's closure.

6) Monitoring independence and expert review. The current monitoring plan calls for Rosemont to fund and carry out monitoring activities. We recommend that monitoring be carried out by an outside entity to add credibility to the results. If this can not be achieved, then independent observers should be allowed to verify the company's monitoring results by way of access to sites and data from the project. In addition, a scientific advisory panel should be gathered to review the monitoring plan, interpret results, and make recommendations for management actions. This advisory panel should not be influenced in any way by Rosemont. Such a proposal has been put forward as the group known as the Biological Oversight Committee (BOC). Funding for the BOC should be compulsory.

7) Integrating monitoring results with management actions. The type of monitoring being proposed for the Rosemont project provides little or no opportunity to change existing management actions or implement new management actions based on results from the monitoring program. Using monitoring data to inform management is called *adaptive management* and we recommend that the final monitoring plan build in opportunities for adaptive management. A key aspect of adaptive management is the establishment of thresholds—or resource conditions—that will prompt management actions to reverse or mitigate for unexpected impacts. Thresholds must be established during the development of the monitoring program (and certainly not later) and should be directly tied to objectives. For example, if groundwater levels decline by a set amount (i.e., threshold), then one (or multiple) management prescription would be developed to mitigate for declines that were beyond the threshold. In some cases, thresholds may be set based on the range of values expressed in the DEIS and other times based on ecological thresholds. For example, cottonwood and willow trees have a threshold for depth to water; if the water table drops below approximately 3m, the trees become stressed. Therefore, 3m is a critical threshold.

Final Thoughts

It is important that any resulting mitigation and monitoring actions must be paid for by Rosemont and therefore contingency funding should be established to take this into account. Finally, it is very important for agencies to impose explicit guidelines for changes requiring mitigation or corrective action, even if uncertainties exist about the exact cause(s) of observed change. This is critical because too often entities will hide behind a mantle uncertainty and suggest more study is needed to determine what caused the observed changes. No matter the level of destruction of the natural environment by the Rosemont mine, one will have a difficult time establishing that observed changes were—without a doubt—caused by the Rosemont Mine, because

establishing cause and effect requires an experimental framework. Therefore, we urge the adoption of a correlative assessment approach that would acknowledge that uncertainty exists, but nevertheless requiring action (assuming that the weight of the evidence favored such a determination). Having a robust sampling design for each parameter would go a long way towards reducing uncertainty. Key to reducing uncertainty about the impacts of the mine is to monitor nearby systems that are not impacted by the mine; this would add a measure of control to the monitoring. Gathering together an unbiased scientific advisory panel (like the BOC) would likely provide expertise needed to make many of the key design determinations that would add rigor and credibility to the process.

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**Mitigation (Conservation) Measures and Monitoring for Biological Resources, Proposed
Rosemont Copper Mine**

2 August 2012

Note 1: This is a partial list of mitigation measures. Some have already been incorporated as legal requirements of permitting, agreed to in the Biological Assessment, integrated as design features, shown in other reports (e.g., Lighting Plan), and other avenues. RCC will be working with Coronado NF and Fish and Wildlife Service during the Section 7 (Endangered Species Act) consultation process to further add and refine conservation measures for threatened and endangered species.

Note 2: The formation of a Biological Oversight Committee (BOC) is not contingent upon the creation of a Biological Mitigation and Monitoring Endowment (BMME). The Forest Service may create the BOC independent of the BMME, and without Rosemont's agreement.

Note 3: Do not introduce any species outside the historic range without a BOC concurrence. If a BOC is not established, do not introduce any species outside the historic range, unless compelled to do so by FWS Conservation Measures or other legal requirement.

Note 4: This and other documents do not include all mitigations for aquatic resources, because a separate hydrology-biology group is working on that topic and develop mitigations and monitoring. Examples are monitoring stations for ground and surface water and spring loss and replacement.

Note 5: There are numerous references to annual monitoring reports. These can (and should) be lumped into a year-end monitoring report for all biological resources, and this could be a section of a larger annual monitoring report.

A. Mitigations (compulsory) authorized by the Coronado National Forest include:

1. RCC will fund a full-time Forest Service Implementation Coordinator and support a **Biological Monitor**, as needed (part-time salary support). The Biological Monitor will:

- ensure compliance with biological mitigation and monitoring requirements
- educate RCC employees about biological resource awareness, environmental sensitivity, damage minimization (avoidance of sensitive species, road kill awareness), and related issues
- prepare an annual report addressing compliance/non-compliance issues and results of monitoring
- recommend stop-work orders to the line officer if significant non-compliance issues are discovered

2. RCC will acquire performance bonds for reclamation and design failures that potentially affect biological resources that will last "into perpetuity" (e.g., 100 years).

Comment [bfp1]: need for two separate mitigation and monitoring proposals. One for FS and FWS, one for request to Rosemont

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Comment [bfp2]: Aside from not having enough information to understand the full impacts of the mine (see cover letter), the mitigations being proposed by the Forest Service are being called "non-discretionary", but do not include the full range of biological resources that will be lost by the Rosemont mine. Also, many of the points in this section are really the responsibility of the FWS. This leaves many biological resources unaccounted for, such as:
1) spring and seeps (yes, the bio-hydro group will take this up, but this process is moving so fast there may not be time to incorporate into a proposal to Rosemont.
2) Trees lost. Yes, there is language in here about trees, but as is noted many times, what are the baseline conditions that need to be mitigated.
3) The list can go on and on...the FS seems content to use the ESA as the biological backstop, but the number and breadth of biological resources lost will be huge. Yes, we have to draw the line somewhere, but drawing it at endangered species (ok, and the giant sedge) is not acceptable.

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Comment [bfp3]: A full-time, on-site monitor is critical.

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Comment [bfp4]: Features?

Comment [bfp5]: This is an important feature, but if we do not require monitoring and adaptive management of a larger suite of biological resources, then how do expect the performance bonds to be initiated.

3. The objective of invasive species mitigation and monitoring is to detect changes in a list of specific invasive species from negatively affecting forest surface resources. The invasive species mitigation and monitoring plan will include measures:

- to manage for eradication or control of invasive animals and plants as defined by>...
- to seasonally detect and eradicate bullfrogs and non-native fish within the Rosemont Ranch inclusive of Rosemont patented lands as well as the National Forest leased lands. The aquatic species monitoring program will include monitoring for dry-weather flows and ponds inadvertently created by mine-related activities.
- having a more comprehensive discussion of managing for spread of Lehmann Lovegrass (right now, if it cannot be controlled, RCC would be out of compliance; not sure if this is realistic).

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4. The reclamation plan needs to include planting of Palmer agaves, oaks, and other shrub and tree species native to the immediate vicinity. One objective of the reclamation plan is that in areas that can be replanted (e.g., waste rock piles), the life form/vegetation structure should be similar to the adjacent habitat (i.e., achieve a vegetation structure of grasses, shrubs, and tree cover similar to the surrounding area). Local seed sources should be used whenever possible. The plan must include information on the origin of the seeds used prior to using the seeds. The seed mix must be approved by the Forest Service.

Add item discussed at previous meeting: Because impairments to Forest woodland resources cannot be fully compensated by the reclamation plan, developing and implementing a plan to restore woodland cover to an area or areas of National Forest located within the Cienega watershed sufficient to mitigate the effects of lost woodland.

New discussion item: Because impairments to grassland plant diversity on National Forest lands cannot be fully compensated by the reclamation plan, develop and implement a plan to restore grassland diversity to an area or areas of National Forest located within the Cienega watershed sufficient to mitigate the effects of lost plant diversity.

Comment [bfp6]: This is where a thorough biological inventory would serve the mine well. Map and establish baseline conditions and require that both reclamation and ongoing management of invasive species not exceed baseline conditions.

Comment [bfp7]: Baseline for agaves, but not oaks

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Comment [bfp8]: Strike ambiguous language. Local seed sources should not be a problem to obtain.

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Comment [J9]: Reportedly there are 30,000 trees that would be impacted by this mine—the Forest should require mitigation for the loss of woodland resources.

Comment [J10]: The grasslands in this elevation zone has very high diversity that is not addressed by the reclamation plan.

Comment [bfp11]: This should not be considered non-discretionary.

Comment [bfp12]: This seems like a really difficult task.

5. As part of environmental awareness, there will be educational materials that discuss how RCC is minimizing or mitigating effects to the environment, while meeting multiple uses on public lands, which includes mineral extraction. Educational materials must be approved in design and content by the Forest Service prior to production and placement. This material will not function as any sort of public relations or advertisements in support of RCC. Educational materials include, but are not limited to:

- strategically placed information kiosks (particularly on HWY 83 turnouts and picnic areas)
- brochures)
- articles or presentations on high-conservation value mitigations (e.g., re-created wetlands designed for breeding of threatened and endangered species)
- effects to game species and watchable wildlife, recommending alternative areas [somewhat dispersed, so nearby areas do not become over-utilized, such as Gardner or Box canyons]

Comment [J13]: Delete—this does not belong in mitigation of biological impacts.

6. The Lighting Mitigation Plan (and/or dark skies mitigation, Lighting Plan) needs to include discussion specifically addressing threatened, endangered, and sensitive species, not just generic language for a reduction in light levels and spectrum. Currently, the only specific wildlife mitigation is for moths, and their role as food for insectivorous bats (which the Lesser Long-nosed Bat is not). For example, how will the Lighting Plan mitigate impacts to Lesser Long-nosed Bat, both in terms of foraging patterns and minimizing light to the Helvetia Mine site? How will the Lighting Plan minimize changes in circadian rhythm for leopard frogs? How will the overall light levels affect Jaguars that may be in the area? Some

of these mitigations can be developed with Section 7 consultation (section B), but not all species of conservation concern are threatened or endangered, such as Coleman's Coral-root (e.g., how will the Lighting Plan minimize changes to ambient growing conditions for the three symbiotic species (oaks-fungi-orchid) integral to its life history needs)?

Comment [bfp14]: Inherent in these questions is the concept of uncertainty and the need to fund research to understand impacts. A targeted research fund absolutely must be required.

7. Qualified bat biologists are required to resurvey bat roosts in the action area to determine the effects of the project on site fidelity, and provide a monitoring report.

Comment [bfp15]: Move to FWS requirements

8. All open artificial (constructed and newly established) waters will have escape ramps installed for bats and other wildlife, per designs of Bat Conservation International.

9. Mitigations specific to Coleman's Coral-root include (these need to be in the Biological Evaluation):

- intensive pre-survey (ALL available habitat) within the footprint prior to ground disturbance
- survey other areas of the Coronado NF (other mountain ranges) to determine distribution on-Forest
- design facilities (structure and placement) to minimize potential effects
- fence and gate all populations/individuals where possible, allowing the widest possible buffer
- monitor populations on or near the footprint annually, and provide an annual report of results
- conduct camera monitoring of populations not fenced to determine changes in grazing pressure (by native and non-native ungulates)

Comment [bfp16]: Move to FWS section? Many other species were in the BE; explain why just focus on these.

10. Mitigations specific to Beardless Chinchweed include (these need to be in the Biological Evaluation):

- intensive pre-survey (ALL available habitat) within the footprint prior to ground disturbance
- survey other areas of the Coronado NF (other mountain ranges) to determine distribution on-Forest
- design facilities to minimize potential effects
- avoid disturbance of any individuals discovered
- protect any individuals that cannot be avoided
- attempt to replant any individuals that cannot be otherwise protected
- monitor populations on or near the footprint annually, and provide an annual report of results

Comment [bfp17]: I really think that research could be more targeted and meaningful than this. I know it is tough for this species, but what about efficacy of relocating?

11. Mitigations specific to Arizona Giant Sedge include (these need to be in the Biological Evaluation):

- Survey existing localities in the action area annually to determine effects of the action and potential loss of populations
- For localities that are going to be lost (e.g., through groundwater drawdown, with or without synergism with climate change/drought), attempt to transplant or seed new localities established in the vicinity (e.g., frog ponds, restored seeps, created wetlands).
- This information needs to be in an annual report.

Comment [bfp18]: Need to tell why the focus on this species, because there are many other FS sensitive species that can be included such as the Poling's giant skipper and Arizona metalmark. They should be included here.

12. Mitigations specific to talussnails (all native species documented within the footprint) (these measures need to be included in the Specialists' Report, not the Biological Evaluation):

- Unless otherwise directed, future surveys should only include surface surveys during the monsoon (no destructive sampling, as with digging into talus slopes)
- Provide engineering solutions and designs to minimize sliding of talus slopes affected by the project, such as those on the ridge-side of the mine pit and associated roads

- Experimentally re-create artificial habitat in the waste rock piles. Monitor the piles every 5 years to determine if talussnails colonize the areas [note: this could be modified if species become federally listed or if a BOC is established that recommends inoculation or other measures]
- Monitor and develop contingency plan to address loss of wet canyon bottom habitats for talussnails.

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Add: Include language on pre-construction surveys for take of migratory birds and desert tortoise

Add Item discussed at previous meeting: Mitigate impairments to Forest headwaters streams by developing and implementing a plan designed to enhance on-site infiltration of runoff in first-order and second-order stream through the use of one-rock dams and other small-scale, permeable structures located in the National Forest within the Cienega watershed.

Comment [J19]: Using aerial photos, Dr. Casavant identified 100 miles of streams affected by the MPO, most of which are first and second order streams

13. In the reclamation plan or other document, inventory all areas of open or running water that may contain contaminants, or may draw birds and other wildlife into the mine facilities, including any waters inadvertently created around the mine site. Monitor these waters to determine their functionality. In this case “waters” ranges from chemical ponds (e.g., raffinate solution) to near-site surface water effluence ponds. Testing water quality should be done to determine if the water meets (current or higher) state aquatic and wildlife standards for surface waters. If water quality does not meet state standards for aquatic and wildlife purposes, then develop an action plan to rectify the impairment to wildlife.

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Comment [bfp20]: Be more specific. Raffinate ponds could cause serious problems; connect this goal to documents that describe these features.

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Comment [bfp21]: This could be a very big deal. Include strong language about goals and objectives of the monitoring.

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Add Item discussed at previous meeting: Monitor water quality and quantity at on-Forest springs, seeps, intermittent streams for compliance with state aquatic and wildlife standards for surface waters and for functional wetland or riparian values in perpetuity. If water quality does not meet state standards for aquatic and wildlife purposes, then develop an action plan to rectify the impairment to wildlife through source reduction or treatment.

Continued discussion item: If the spring, seeps or intermittent stream goes dry for longer than x years or loses wetland functions, then what is the Forest’s request for mitigation? At today’s meeting we discussed the concept that such mitigation be self-sustaining or at least not requiring perpetual maintenance. If it cannot be rectified on site, then at least functionality could be restored elsewhere on Forest. For instance, re-directing the use of springs that are now used only for human or livestock use to wildlife use, or repairing streams damaged elsewhere.

14. Marker pipes (PVC pipes commonly used in mining operations) will be capped to reduce potential wildlife mortality. Other similar entrapments, if discovered, will be mitigated to decrease mortality of wildlife species.

15. Mitigations specific to Golden Eagle¹

- Work cooperatively with Golden Eagle experts (AGFD, FWS, university researchers, Forest Service Research Stations) to design mitigative structures and measures to determine best management practices

¹ Technically, Golden Eagles are managed through FWS under the Bald and Golden Eagle Protection Act, Migratory Bird Treaty Act, and Executive Order 13186, but the Forest Service has responsibilities for mitigation and reporting.

- Survey for Golden Eagles annually to determine use for foraging and nesting, in the action area, as well as documenting accidental mortality
- Review Bald and Golden Eagle Act regulations annually (e.g., permitting), as these are currently being developed and updated
- Provide an annual report discussing results of the above measures

Comment [bfp22]: This will yield very little; consider more focused effort looking at habitat use of nearby eagle pairs.

16. Replacement waters cannot be designed such that they will contribute to the spread of invasive species (e.g., American Bullfrogs, which although absent, can become readily established and use stockponds as stepping stones for spread, thereby thwarting attempts to re-establish and recover species of conservation concern. Monitor afterwards for bullfrogs.

Comment [bfp23]: This can really fall under the purview of the on-the-ground monitor.

17. Develop a wildlife mortality monitoring and mitigation plan to detect and rectify wildlife mortality in the pit lake and elsewhere on the facilities. Prepare an annual report of mortality.

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Comment [bfp24]: See number 13.

18. Annually report when, where, and how vegetation is removed as part of an effort to monitor effects of ground-disturbance on birds (e.g., Arizona statutes for unintentional take, as well as Migratory Bird Treaty Act).

Comment [bfp25]: This really seems like a dead-end for information. Avoidance measure would be to say that they can not remove vegetation during the breeding season.

B. Mitigations that should be discussed with FWS regarding threatened and endangered species as conservation measures include:

Comment [bfp26]: Strip out and provide to FWS

Chiricahua Leopard Frog (CLF)

1. Participation by RCC personnel and/or contractors on the Southeastern Arizona CLF Recovery Team would aid in recovery of frogs in the Santa Rita and Empire Recovery Units. The BOC can help select projects that would help in CLF recovery.

Comment [bfp27]: Has this been vetted with the Recovery Team? Certainly, actions by RCC could contribute to Recovery efforts, but not sure that having a proponent of habitat destruction on the team would be helpful.

2. Designing at least two surface-water runoff areas that will allow perennial pool formation that can be used as high-quality habitat sites for CLF breeding. The BOC can help design these runoff areas so that they function as breeding sites and recovery areas, rather than population sinks. These sites can harbor other species of conservation concern, including Arizona Giant Sedge, and possibly Huachuca Water Umbel.

3. The BOC can help design constructed waters that will replace lost waters to be used by CLF and other species.

Comment [bfp28]: If the BOC is playing an important role in so many aspects of mitigation, this group need to be funded by RCC, and this should not be "discretionary", as indicated in Note 2

4. Measures are taken to ensure CLF do not breed in sites within the perimeter fence (likely population sinks in the short term).

Comment [bfp29]: Again, back to on-site monitors

5. Discuss the utility of funding a position to establish and maintain a safe harbor agreement for five years.

Comment [bfp30]: Discussion is not action

Lesser Long-nosed Bat

6. Zero Net Loss (see C. 4) for agaves. There will be a loss of an estimated 200,000 to 300,000 Palmer Agaves in the mine footprint. This can be accomplished over the life of the mine by:

- Transplanting agaves salvaged from the site onto other areas of the site, such as waste rock piles

- Transplanting agaves offsite to areas that have been disturbed (thus lacking a natural density of agaves)
- Growing and planting propagated agaves of different age classes at different times on and off the mine site
- Records must be kept on number grown/salvaged, planted/transplanted, and survivorship to show compliance with ZNL requirement

7. **Monitor the Helvetia mine** by exit counts to determine population levels for the life of the mine, and determine if and when the mine is abandoned. This can be done during the standard August “Lepto counts” organized by AGFD. The mine can only be entered when the BOC deems it prudent, and all White-nose Syndrome protection measures must be followed (i.e., the latest direction from the Forest Service, State of Arizona, and Fish and Wildlife Service).

Comment [bfp31]: Due to the variable abundance of this species (site-to-site, year-to-year), monitoring one site is not helpful. RRC should fund a much broader and in-depth monitoring project.

Native fishes and other stream-associated species

8. There currently is little to no direction on mitigations for this group of species (with the possible exception of Sonoita Creek compensatory land acquisition). **Work with FWS to help offset aquatic and riparian resource concerns.** Certainly the establishment of a BMME with oversight by the BOC will be a huge step toward conservation of stream-associated species. Possible mitigations include, but are not limited to:

Comment [bfp32]: Ambiguous

- Construction of a fish screen at the Del Lago Diversion
- Retirement of the Vail golf course water source
- Establishment or re-establishment of Huachuca water umbel

C. Mitigations recommended by the biological resources cooperator agency group² include:

1. **RCC to establish a Biological Mitigation and Monitoring Endowment (BMME).** The BMME would fund mitigation and monitoring programs needed to offset the effects of the proposed copper mine and its associated activities. The BMME working capital would be managed by a third party, or a state or federal agency. The entity holding the funds, would not be selected or controlled by the RCC. The BMME would fund salary for members of the Biological Oversight Committee (BOC, C. 2) when meeting to consider on BMME projects, and oversee the dispersal of funds to the contractors or agencies.

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Comment [J33]: The deleted item does not reduce the impact.

Deleted: Surveys of historic and new waters potentially harboring Huachuca Water Umbel¶

Comment [J34]: Any mitigation in this category would ultimately need to be reduced to a dollar amount.

Comment [bfp35]: Target amount.

Comment [J36]: I don’t agree it has to be third party. Why couldn’t a federal or state agency hold the money?

Deleted: third party would be neutral toward RCC, and the Board

Comment [bfp37]: I think we could do a better job setting goals for this group. These processes usually turn to feeding frenzies. And again, BOC establishment needs to be in the FC compulsory section.

2. **The BOC selects projects to best manage biological mitigation and monitoring using funds** administered by the BMME. This is an important concept, because the best mitigation and monitoring plans are those that are specifically identified, designed, and planned in the future, as the mine progresses—a key factor of adaptive management and best management practices. The BOC would be composed of various agencies with authorities, including, but not limited to, Arizona Game and Fish Department, Pima County, Bureau of Land Management, Coronado National Forest (which may be a non-voting member), and Fish and Wildlife Service. There should also be participation from other groups such as Sky Island Alliance, The Nature Conservancy, and University of Arizona scientists. The BOC would have to be compliant with all regulations and policy, including the Federal Advisory Committee Act.

Examples of BOC functions may include:

- recommending compensatory lands
- providing design features for aquatic feature restoration projects

² In general, these are not within the authority of the USDA Forest Service to require, or even ask, of the proponent. Pima County also agreed with the mitigations and monitoring in sections A and B as amended herein.

Deleted: The cooperating agencies

- funneling funds to provide for husbandry of native species (e.g., fund Arizona-Sonora Desert Museum staff or facilities)
- recommending research projects
- working with stakeholders to develop safe-harbor agreements
- selecting projects to fund

3. **Compensatory lands.** These are properties that would be purchased by RCC, having conservation easements into perpetuity. Compensatory lands represent offsetting values lost or degraded by the project. Compensatory lands should represent habitats, structural features, and plant and animal populations affected. Vegetation communities and physical attributes that would be affected by the proposed copper mine include:

- semi-desert grasslands
- Madrean encinal (oak) woodlands
- aquatic habitats (both ephemeral and perennial)
- riparian habitats (both ephemeral and perennial aquatic habitats)
- talus, [limestone outcrops](#) and other rock features

Comment [bfp38]: Move to non-discretionary.

The **BOC** should play a role in helping to decide which lands are comparable in values. Compensatory lands required and selected by Army Corps of Engineers may or may not meet the values to biological resources considered adequate by the BOC.

Comment [bfp39]: Link into existing planning processes, such as Habitat Protection Priorities, as established for the SDCP

4. **Habitat compensation and the Zero Net Loss (ZNL) concept.** Lost or disturbed habitat may not be completely met by compensatory lands because of intrinsic values unique to each area. In order to meet the intent of habitat compensation, there should be a ZNL concept that applies to biological resource values. For vegetation communities, in addition to (or in lieu of) compensatory lands, the BOC can select projects that treat oak woodlands for late successional attributes and resiliency to severe wildfire in critical wildlife areas, rather than purchasing oak woodlands in areas with less wildlife values. In this case, the ZNL would be the same number of acreages off-site as the acres lost or degraded in and near the footprint (and associated disturbed areas). Another example is shown in B. 5 for Palmer Agaves where there would be ZNL for the 200,000 + agaves.

Comment [bfp40]: Oak woodland mitigation is a FS duty

5. **Restore degraded riparian habitat in drainages affected by an altered hydrologic and geomorphic condition (e.g., maintain current riparian and aquatic functioning, repair damage to banks, and restore pools with uncharacteristic sediment deposition).** This is particularly important for, but is not limited to, Davidson Canyon (and the canyons that feed into Davidson Canyon) and lower Cienega Creek.

Comment [bfp41]: Issue of uncertainty and the need to bond big

6. **Deliver sterile, predator-free water to at-risk waters that harbor species of conservation concern when levels have dropped during drought.** This could include tanks occupied by CLF or “perennial” stretches of upper Cienega Creek that go dry.

7. **Fund a third party to complete new-scenario models of refugia/destination and corridor habitats for wildlife, including Jaguar and Ocelot.** The Arizona Linkages models were designed with the northern Santa Ritas being a refugium/destination, but the proposed copper mine would alter that, so current scenario models would no longer apply.

Comment [bfp42]: I really don't think this is needed and has already been suggested as part of impacts analysis.

8. **Mitigate road-kill and passage of animals by constructing overpasses and underpasses for wildlife, following direction of the BOC and/or C.7 model.**

9. For bats (other than Lesser Long-nosed Bats, which are considered in Section B), protect known roosts in the general vicinity (Santa Ritas and adjacent areas) harboring colonies, especially for species recognized as being of conservation concern in AGFD/Pima County/Forest Service/BLM lists. This includes the Townsend's Big-eared Bat colony on the west side of Rosemont Ridge.

Comment [J43]: Are any of these bats on the Forest's sensitive species list?

10. Survey for overwintering bat roosts in the action area to determine where White-nose Syndrome may be manifested should the disease reach southeastern Arizona.

11. RCC or biological contractors to take the lead on an interagency conservation agreement for Coleman's Coral-root.

Comment [bfp44]: Move to FWS section; FS resource will be lost